

Serial Number: 10/662,066
In reply to Office Action dated 09-09-05
Page 3 of 15

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (original) A spray nozzle comprising:

a flexible spray tip defining a spray orifice, the flexible spray tip constructed and arranged to flex, thereby altering the shape of the spray orifice;

a metering member in operable contact with the flexible spray tip and movable relative thereto, the metering member constructed and arranged to influence the flexible spray tip to flex in response to the relative movement between the metering member and the flexible spray tip;

a driving assembly operably attached to the metering member; and,

a nozzle body defining an interior chamber that houses at least portions of the driving assembly, the metering member, and the flexible spray tip, the nozzle body defining an inlet into through which fluid may enter the interior chamber of the nozzle body;

wherein the nozzle body, driving assembly, metering member, and flexible spray tip, are arranged such that pressure changes in a fluid flowing through the interior chamber cause position changes in the driving assembly, thereby moving the metering member, thereby changing the influence the metering member has on the flexible spray tip, and thereby altering the shape of the spray orifice.

2. (original) The spray nozzle of claim 1 wherein the flexible spray tip comprises:

a flange;

a spray shaping portion extending distally from the flange, the spray shaping portion defining a slot and the orifice therein; and,

a pair of leveraging members extending proximally from the flange, the leveraging members capable of temporarily deforming the spray-shaping portion when the leveraging members are flexed.

Serial Number: 10/662,066

In reply to Office Action dated 09-09-05

Page 4 of 15

3. (original) The spray nozzle of claim 1 further comprising a spray tip cap, the flexible spray tip being molded to the spray cap, the spray cap operably attached to a distal end of the nozzle body.
4. (original) The spray nozzle of claim 3 wherein the spray tip cap is connected to the distal end of the nozzle body with a quick-connect mechanism.
5. (original) The spray nozzle of claim 1 wherein the flexible spray tip is molded to the nozzle body.
6. (original) The spray nozzle of claim 1 wherein the metering member comprises a wedge-shaped tip to influence the flexible spray tip to flex in response to the relative movement between the metering member and the flexible spray tip.
7. (original) The spray nozzle of claim 1 wherein the metering member comprises at least one flow groove defined by the metering member, the flow groove providing the metering member a metering capability.
8. (original) The spray nozzle of claim 7 wherein the flow groove has a varying cross-sectional area.
9. (original) The spray nozzle of claim 7 wherein the flow groove has a constant cross-sectional area.
10. (original) The spray nozzle of claim 1 wherein the driving assembly comprises a spring.
11. (original) The spray nozzle of claim 10 wherein the spring comprises a coil spring.
12. (original) The spray nozzle of claim 1 wherein the driving assembly comprises elastomeric material.
13. (original) The spray nozzle of claim 1 wherein the driving assembly comprises hydraulic fluid.
14. (original) The spray nozzle of claim 1 wherein the driving assembly comprises a compressible gas.
15. (original) The spray nozzle of claim 1 wherein the driving assembly comprises a motor-driven linkage.

Serial Number: 10/662,066

In reply to Office Action dated 09-09-05

Page 5 of 15

16. (original) The spray nozzle of claim 1 wherein the nozzle body comprises external threads on a distal end of the nozzle body.
17. (original) The spray nozzle of claim 1 wherein the nozzle body comprises at least a part of a quick-connect mechanism.
18. (original) The spray nozzle of claim 16 further comprising a spray tip cap threaded to mate with the threads on the distal end of the nozzle body, and constructed and arranged to compress a flange of the spray tip cap against the distal end of the nozzle body.
19. (original) The spray nozzle of claim 17 further comprising a spray tip cap configured with at least part of a quick disconnect system that is configured to interact with the at least part of a quick-connect mechanism of the nozzle body.
20. (original) The spray nozzle of claim 1 further comprising a spray tip cap constructed and arranged to hold the spray tip against a distal end of the nozzle body.
21. (original) The spray nozzle of claim 1 wherein the spray tip is molded against the nozzle body.
22. (original) The spray nozzle of claim 1 wherein the spray tip is welded against the nozzle body.
23. (original) A self-adjusting variable spray nozzle comprising:
 - a first means for shaping a stream of pressurized fluid;
 - a second means for directing pressurized fluid into the first means; and,
 - a third means for adjusting the first means in response to the pressurized fluid.
24. (original) The self-adjusting variable spray nozzle of claim 23 wherein the first means for shaping a stream of pressurized fluid comprises a flexible spray tip defining a spray orifice, the flexible spray tip constructed and arranged to flex, thereby altering the shape of the spray orifice.
25. (original) The self-adjusting variable spray nozzle of claim 24 wherein the flexible spray tip comprises:
 - a flange;

Serial Number: 10/662,066

In reply to Office Action dated 09-09-05

Page 6 of 15

- a spray shaping portion extending distally from the flange, the spray shaping portion defining a slot and the orifice therein; and,
- a pair of leveraging members extending proximally from the flange, the leveraging members capable of temporarily deforming the spray-shaping portion when the leveraging members are flexed.
26. (original) The self-adjusting variable spray nozzle of claim 23 wherein the second means for directing pressurized fluid into the first means comprises a nozzle body defining an interior chamber and is in fluid communication with the spray tip, the nozzle body defining an inlet into through which fluid may enter the interior chamber of the nozzle body.
27. (original) The self-adjusting variable spray nozzle of claim 23 wherein the third means for adjusting the first means in response to the pressurized fluid comprises:
- a metering member in operable contact with the first means and movable relative thereto, the metering member constructed and arranged to influence the first means in response to the relative movement between the metering member and the first means; and,
- a driving assembly operably attached to the metering member, for sensing fluid pressure and imparting the relative movement to the metering member.
28. (original) The self-adjusting variable spray nozzle of claim 27 wherein the metering member defines a flow groove having a variable cross-section.
29. (original) The self-adjusting variable spray nozzle of claim 27 wherein the metering member defines a flow groove having a constant cross-section.
30. (withdrawn) A spray system comprising:
- a tank;
- a pump, fluidly coupled to the tank and capable of taking suction thereon;
- at least one spray nozzle fluidly coupled to the pump;

Serial Number: 10/662,066
In reply to Office Action dated 09-09-05
Page 7 of 15

- a sensor fluidly coupled to the at least one spray nozzle, and constructed and arranged to monitor fluid flowing from the pump to the at least one spray nozzle;
- a regulating means for regulating the fluid flowing to the at least one spray nozzle;
- a controller in data flow communication with the flow sensor; and,
- a vehicle speed sensor in data flow communication with the controller;
- whereby the controller is constructed and arranged to determine whether flow to the at least one nozzle should be increased or decreased based on the inputs received from the flow sensor and the vehicle speed sensor.
31. (withdrawn) The spray system of claim 30 wherein the vehicle speed sensor comprises a global positioning sensor receiver.
32. (withdrawn) The spray system of claim 30 wherein the vehicle speed sensor comprises a radar system.
33. (withdrawn) The spray system of claim 30 wherein the regulating means comprises a throttle valve fluidly connected between the pump, the at least one spray nozzle, and the tank, the throttle valve constructed and arranged such that, when opened, the throttle valve diverts fluid from the pump to the tank, thereby reducing flow to the at least one nozzle.
34. (withdrawn) The spray system of claim 33 wherein the throttle valve comprises a manual throttle valve.
35. (withdrawn) The spray system of claim 33 wherein the throttle valve comprises a servo-motor constructed and arranged to throttle the throttle valve and further to receive commands from the controller, thereby giving the controller control over the position of the throttle valve.
36. (withdrawn) The spray system of claim 30 wherein the regulating means comprises a variable speed motor driving the pump, such that fluid flow to the at least one nozzle is varied by varying the speed of the pump.
37. (withdrawn) The spray system of claim 30 further comprising a GPS receiver in data flow communication with the controller, constructed and arranged to provide positioning data to the controller, the controller capable of being programmed with a flow plan having various flow

Serial Number: 10/662,066

In reply to Office Action dated 09-09-05

Page 8 of 15

rates that correspond to geographical areas, the controller thus able to compare positioning data from the GPS receiver to the flow plan and provide appropriate adjustment commands to the regulating means.

38. (withdrawn) The spray system of claim 30 wherein the at least one spray nozzle comprises:

a flexible spray tip defining a spray orifice, the flexible spray tip constructed and arranged to flex, thereby altering the shape of the spray orifice;

a metering member in operable contact with the flexible spray tip and movable relative thereto, the metering member constructed and arranged to influence the flexible spray tip to flex in response to the relative movement between the metering member and the flexible spray tip;

a driving assembly operably attached to the metering member; and,

a nozzle body defining an interior chamber that houses at least portions of the driving assembly, the metering member, and the flexible spray tip, the nozzle body defining an inlet into through which fluid may enter the interior chamber of the nozzle body;

wherein the nozzle body, driving assembly, metering member, and flexible spray tip, are arranged such that pressure changes in a fluid flowing through the interior chamber cause position changes in the driving assembly, thereby moving the metering member, thereby changing the influence the metering member has on the flexible spray tip, and thereby altering the shape of the spray orifice.

39. (withdrawn) The spray system of claim 36 wherein the spray tip comprises:

a flange;

a spray-shaping portion extending distally from the flange, the spray shaping portion defining a slot and the orifice therein; and,

a pair of leveraging members extending proximally from the flange, the leveraging members capable of temporarily deforming the spray-shaping portion when the leveraging members are flexed.

Serial Number: 10/662,066

In reply to Office Action dated 09-09-05

Page 9 of 15

40. (withdrawn) The spray system of claim 30 wherein the sensor comprises a flow sensor.
41. (withdrawn) The spray system of claim 30 wherein the sensor comprises a pressure sensor.
42. (withdrawn) A spray tip for a spray nozzle comprising:
- a flange;
 - a spray-shaping portion extending distally from the flange, the spray shaping portion defining a slot and an orifice therein; and,
 - at least a pair of leveraging members extending proximally from the flange, the leveraging members capable of temporarily deforming the spray-shaping portion when the leveraging members are flexed.